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Zimmerman et al.(10) **Pub. No.: US 2021/0123626 A1**(43) **Pub. Date: Apr. 29, 2021**(54) **THERMOSTAT WITH ENERGY MODELING**(71) Applicant: **Johnson Controls Technology Company**, Auburn Hills, MI (US)(72) Inventors: **Nathan M. Zimmerman**, Wauwatosa, WI (US); **Michael J. Ajax**, Milwaukee, WI (US)(73) Assignee: **Johnson Controls Technology Company**, Auburn Hills, MI (US)(21) Appl. No.: **17/140,957**(22) Filed: **Jan. 4, 2021****Related U.S. Application Data**

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(57)

ABSTRACT

A thermostat for a building space can include a processing circuit. The processing circuit can cause building equipment to heat or cool the building space via one or more heating outputs or one or more cooling outputs. The processing circuit can record the length of time that the processing circuit causes the building equipment to heat or cool the building space. The processing circuit can simulate a thermal plant model to determine a simulated runtime, wherein the thermal plant model is a thermal plant model of the building space and the building equipment. The processing circuit can determine a number of hours saved based on the simulated runtime and the recorded length of time.

